

## CLAIMS

What is claimed is:

1     1.     A method comprising:  
2             determining for an integrated circuit (IC) a target for a proxy frequency of a  
3     periodic signal, the target proxy frequency to be associated with the IC and taken  
4     into consideration in regulating voltage to be applied to a constituent operational  
5     circuit of the IC, the proxy frequency being reflective of a potential of an  
6     operational frequency of the constituent operational circuit, and the IC, in addition  
7     to the constituent operational circuit, further having a proxy circuit that outputs  
8     the proxy signal; and downlocking at least a selected one of the target of the  
9     proxy frequency, a bus-to-core frequency multiplier of the constituent operational  
10    circuit, a minimum Vcc, a maximum Vcc, a maximum temperature, and a bus  
11    frequency ratio multiplier associated with the IC.

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1     2.     The method of claim 1, wherein said determining comprises testing the IC,  
2     and selecting an operational frequency of the constituent operational circuit  
3     observed during said testing to be a specification maximum operational  
4     frequency for the constituent operational circuit.

1     3.     The method of claim 2, wherein said selecting of an operational frequency  
2     of the constituent operational circuit observed during said testing comprises  
3     selecting the fastest operational frequency of the constituent operational circuit  
4     observed during said testing.

1 4. The method of claim 2, wherein the method further comprises selecting  
2 the proxy frequency of the proxy signal outputted by the proxy circuit, while the  
3 constituent operational circuit operated at the selected operational frequency, as  
4 the target for the proxy frequency.

5 5. The method of claim 2, wherein said testing of the IC comprises testing  
6 the IC at a plurality of temperatures.

1 6. The method of claim 1, wherein said downlocking comprises distributing  
2 the selected one or ones of the target proxy frequency information, the bus-to-  
3 core frequency multiplier of the constituent operational circuit, the minimum Vcc,  
4 the maximum Vcc, the maximum temperature, and the bus frequency ratio  
5 multiplier.

1 7. The method of claim 1, wherein the method further comprises configuring  
2 the IC with the selected one or ones of the target proxy frequency, the bus-to-  
3 core frequency multiplier of the constituent operational circuit, the minimum Vcc,  
4 the maximum Vcc, the maximum temperature, and the bus frequency ratio  
5 multiplier.

1 8. The method of claim 7, wherein said configuring of the IC comprises a  
2 selected one of storing the selected one or ones of the target proxy frequency,  
3 the bus-to-core frequency multiplier of the constituent operational circuit, the  
4 minimum Vcc, the maximum Vcc, the maximum temperature, and the bus  
5 frequency ratio multiplier in one or more storage locations of the IC, and setting  
6 one or more fuses of the IC.

1 9. The method of claim 7, wherein the method further comprises configuring  
2 the IC with an adjustment to the target proxy frequency, to be also taken into  
3 consideration in said regulation of voltage to be applied to the IC.

1 10. The method of claim 7, wherein the method further comprises re-  
2 configuring the IC with a replacement one of at least a selected of the target  
3 proxy frequency, the bus-to-core frequency multiplier of the constituent  
4 operational circuit, the minimum Vcc, the maximum Vcc, the maximum  
5 temperature, and the bus frequency ratio multiplier.

1 11. The method of claim 1, wherein the method further comprises providing an  
2 adjustment to the target proxy frequency.

1 12. The method of claim 11, where the method further comprises providing an  
2 upgrade to control logic employed in regulating voltage applied to the IC.

1 13. The method of claim 1, wherein the method further comprises accepting  
2 electronic payment tendered for upgrading the target proxy frequency.

1 14. A method comprising:  
2 accepting a request to upgrade an integrated circuit (IC) of a client device,  
3 the IC having a constituent operational circuit and a proxy circuit, the target proxy  
4 frequency being a target for a proxy frequency of a proxy signal outputted by the  
5 proxy circuit, and the proxy frequency being reflective of a potential of an  
6 operational frequency of the constituent operational circuit, and to be taken into  
7 consideration in regulating voltage to be applied to the IC ; and

8 providing the client device with data to upgrade at least a selected one of  
9 a target proxy frequency, a bus-to-core frequency multiplier of a constituent  
10 operational circuit, a minimum Vcc, a maximum Vcc, a maximum temperature, a  
11 bus frequency ratio multiplier, and voltage regulation control logic associated with  
12 the IC.

1 15. The method of claim 14, wherein the IC is installed on the client device.

1 16. The method of claim 14, wherein the IC is configured with the target proxy  
2 frequency.

1 17. The method of claim 14, wherein the data comprises a selected one of a  
2 replacement target proxy frequency to replace said target proxy frequency  
3 associated with the IC, a replacement adjustment to replace an adjustment to be  
4 applied to said target proxy frequency prior to taking the target proxy frequency  
5 into consideration when regulating voltage to be applied to the IC, and an  
6 adjustment to at least one other adjustment to be applied to said target proxy  
7 frequency prior to taking the target proxy frequency into consideration when  
8 regulating voltage to be applied to the IC.

1 18. The method of claim 14, where said providing of the data is based at least  
2 in part on identification information of the IC, and the method further comprises  
3 the server device requesting for the identification information.

1 19. The method of claim 14, wherein the method further comprises accepting  
2 electronic payment tendered for upgrading the target proxy frequency.

1    20.    A method comprising:  
2            requesting by a client device for an upgrade for an integrated circuit (IC),  
3    the IC having a constituent operational circuit and a proxy circuit, the target proxy  
4    frequency being a target for a proxy frequency of a proxy signal outputted by the  
5    proxy circuit, and the proxy frequency being reflective of a potential of an  
6    operational frequency of the constituent operational circuit, and to be taken into  
7    consideration in regulating voltage to be applied to the IC ; and  
8            receiving by the client device data to upgrade at least a selected one of a  
9    target proxy frequency, a bus-to-core frequency multiplier of a constituent  
10    operational circuit, a minimum Vcc, a maximum Vcc, a maximum temperature, a  
11    bus frequency ratio multiplier, and voltage regulation control logic associated with  
12    the IC.

1    21.    The method of claim 20, wherein the IC is installed on the client device.

1    22.    The method of claim 20, wherein the IC is configured with the target proxy  
2    frequency.

1    23.    The method of claim 20, wherein the data comprises a selected one of a  
2    replacement target proxy frequency to replace said target proxy frequency  
3    associated with the IC, a replacement adjustment to replace an adjustment to be  
4    applied to said target proxy frequency prior to taking the target proxy frequency  
5    into consideration when regulating voltage to be applied to the IC, and an  
6    adjustment to be combined with at least one other adjustment and applied to said  
7    target proxy frequency prior to taking the target proxy frequency into  
8    consideration when regulating voltage to be applied to the IC.

1 24. The method of claim 23, wherein the method further comprises  
2 associating the IC with the selected one of the replacement target proxy  
3 frequency, the replacement adjustment and the adjustment to be combined with  
4 at least one other adjustment.

1 25. The method of claim 24, wherein said associating comprises configuring  
2 the IC with the selected one of the replacement target proxy frequency, the  
3 replacement adjustment and the adjustment to be combined with at least one  
4 other adjustment.

1 26. The method of claim 20, where the data is provided based at least in part  
2 on identification information of the IC, and the method further comprises  
3 providing the server device with the identification information.

1 27. The method of claim 20, wherein the method further comprises tendering  
2 electronic payment for the data.

1 28. A system comprising:  
2 a networking interface;  
3 a storage device having programming instructions stored therein,  
4 designed to provide a client device with data to upgrade at least a selected one  
5 of a target proxy frequency, a bus-to-core frequency multiplier of a constituent  
6 operational circuit, a minimum Vcc, a maximum Vcc, a maximum temperature, a  
7 bus frequency ratio multiplier, and voltage regulation control logic associated with  
8 an integrated circuit (IC) having a constituent operational circuit and a proxy  
9 circuit, the target proxy frequency being a target for a proxy frequency of a proxy

10 signal outputted by the proxy circuit, and the proxy frequency being reflective of a  
11 potential of an operational frequency of the constituent operational circuit, and to  
12 be taken into consideration in regulating voltage to be applied to the IC; and  
13 at least one processor coupled to the networking interface and the storage  
14 to execute the programming instructions.

1 29. The system of claim 28, wherein the programming instructions are  
2 designed to provide a selected one of a replacement target proxy frequency to  
3 replace said target proxy frequency associated with the IC, a replacement  
4 adjustment to replace an adjustment to be applied to said target proxy frequency  
5 prior to taking the target proxy frequency into consideration when regulating  
6 voltage to be applied to the IC, and an adjustment to at least one other  
7 adjustment to be applied to said target proxy frequency prior to taking the target  
8 proxy frequency into consideration when regulating voltage to be applied to the  
9 IC, as the data.

1 30. The system of claim 28, where said programming instructions are  
2 designed to provide the data based at least in part on identification information of  
3 the IC, and request for the identification information.

1 31. The system of claim 28, said programming instructions are designed to  
2 accept electronic payment tendered for upgrading the target proxy frequency.

1 32. A system comprising:  
2 a networking interface;  
3 a storage device having programming instructions stored therein,  
4 designed to receive from a server device data to upgrade at least a selected one

5 of a target proxy frequency, a bus-to-core frequency multiplier of a constituent  
6 operational circuit, a minimum Vcc, a maximum Vcc, a maximum temperature, a  
7 bus frequency ratio multiplier, and voltage regulation control logic associated with  
8 an integrated circuit (IC) having a constituent operational circuit and a proxy  
9 circuit, the target proxy frequency being a target for a proxy frequency of a proxy  
10 signal outputted by the proxy circuit, and the proxy frequency being reflective of a  
11 potential of an operational frequency of the constituent operational circuit, and to  
12 be taken into consideration in regulating voltage to be applied to the IC; and  
13 at least one processor coupled to the networking interface and the storage  
14 to execute the programming instructions.

1 33. The system of claim 32, wherein the data comprises a selected one of a  
2 replacement target proxy frequency to replace said target proxy frequency  
3 associated with the IC, a replacement adjustment to replace an adjustment to be  
4 applied to said target proxy frequency prior to taking the target proxy frequency  
5 into consideration when regulating voltage to be applied to the IC, and an  
6 adjustment to be combined with at least one other adjustment and applied to said  
7 target proxy frequency prior to taking the target proxy frequency into  
8 consideration when regulating voltage to be applied to the IC.

1 34. The system of claim 33, wherein the programming instructions are further  
2 designed to associate the IC with the selected one of the replacement target  
3 proxy frequency, the replacement adjustment and the adjustment to be combined  
4 with at least one other adjustment.

1 35. The system of claim 34, wherein the programming instructions are further  
2 designed to configure the IC with the selected one of the replacement target



3 proxy frequency, the replacement adjustment and the adjustment to be combined  
4 with at least one other adjustment.

1 36. The system of claim 32, where the data is provided based at least in part  
2 on identification information of the IC, and the programming instructions are  
3 further designed to provide the server device with the identification information.

1 37. The system of claim 32, wherein the programming instructions are further  
2 designed to tender electronic payment for the data.